

LESSON
5.1

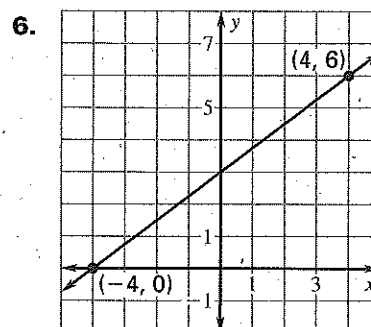
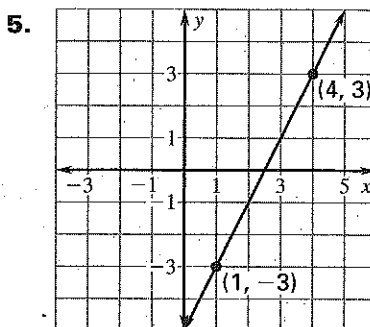
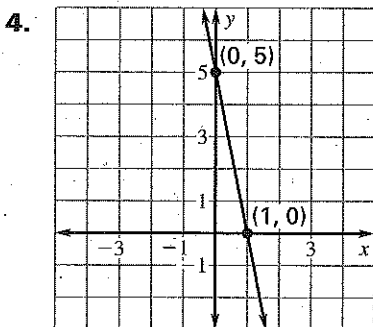
Practice

For use with pages 282-291

Write an equation of the line with the given slope and y-intercept.

1. slope: 7; y-intercept: 4 2. slope: -3; y-intercept: 5 3. slope: 1; y-intercept: -6

Write an equation of the line shown.



Write an equation of the line that passes through the given points.

7. (-1, 0), (0, -2) 8. (0, 4), (6, 13) 9. (4, 5), (8, 2)
10. (-1, -9), (6, 5) 11. (2, -13), (-3, 12) 12. (-4, -21), (1, -1)

Write an equation for the linear function f with the given values.

13. $f(0) = -1, f(3) = -10$
 y-int: (0, -1) (3, -10)
 $m = \frac{\Delta y}{\Delta x} = \frac{-10 - (-1)}{3 - 0} = \frac{-9}{3} = -3$
 $y = -3x - 1$
 $f(x) = -3x - 1$

14. $f(-4) = 5, f(2) = 2$
 (-4, 5) (2, 2)
 $m = \frac{\Delta y}{\Delta x} = \frac{5 - 2}{-4 - 2} = \frac{3}{-6} = -\frac{1}{2}$
 $y - 2 = -\frac{1}{2}(x - 2)$
 $y - 2 = -\frac{1}{2}x + 1$
 $\frac{y + 2}{+2} = \frac{-\frac{1}{2}x + 1}{+2}$
 $y = -\frac{1}{2}x + 3$
 $f(x) = -\frac{1}{2}x + 3$

15. $f(-4) = -2, f(2) = 7$
 (-4, -2) (2, 7)
 $m = \frac{\Delta y}{\Delta x} = \frac{-2 - 7}{-4 - 2} = \frac{-9}{-6} = \frac{3}{2}$
 $y - 7 = \frac{3}{2}(x - 2)$
 $y - 7 = \frac{3}{2}x - 3$
 $\frac{y + 7}{+7} = \frac{\frac{3}{2}x - 3}{+7}$
 $y = \frac{3}{2}x + 4$
 $f(x) = \frac{3}{2}x + 4$

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LESSON
5.1

Practice *continued*
For use with pages 282-291

16. Landscape Supply A landscape supply business charges \$30 to deliver mulch. The mulch costs \$23 per cubic yard.

- a. Write an equation that gives the total cost (in dollars) of having mulch delivered to a site as a function of the number of cubic yards ordered.

$$C = 30 + 23m$$

$C = \text{cost } (\$)$
 $m = \text{mulch (yd}^3\text{)}$

- b. Identify the dependent and independent variables in this situation. *Cost depends on # of cu. yd. of mulch delivered*
- dependent: Cost
independent: cubic yards of mulch

- c. Find the cost of having 8 cubic yards of mulch delivered to a site.

$$C = 30 + 23(8)$$

$$C = 30 + 184$$

$$C = \$214.00$$

17. Cable Television A cable company charges \$44 per month for basic service. Each premium channel costs an additional \$16 per month.

- a. Write an equation that gives the total cost (in dollars) of cable each month as a function of the number of premium channels.

$$C = 44 + 16p$$

$C = \text{cost}$
 $p = \text{premium channels}$

- b. Identify the dependent and independent variables in this situation.

Total Cost: dependent
of premium channels: independent

- c. Explain how you can use the equation from part (a) to approximate how many premium channels you can have for \$80 a month.

Substitute 80 for C and then solve for p.

$$\begin{array}{r} 80 = 44 + 16p \\ -44 \quad -44 \\ \hline 36 = 16p \\ \frac{36}{16} = \frac{16p}{16} \end{array}$$

18. Laser Printer A laser printer has a "sleep" mode that is an energy-saving feature. When a job is sent to the printer, it takes 45 seconds for the printer to warm up and then the printer prints pages at a rate of 6 pages per minute.

- a. Write the time it takes the printer to warm up in minutes.

$$45 \text{ sec} = \frac{3}{4} \text{ min}$$

- b. Write an equation that gives the total amount of time (in minutes) it takes the printer to warm up and print a job as a function of the number of pages in the job.

$$t = \frac{3}{4} + \frac{p}{6} \quad \text{or} \quad t = \frac{3}{4} + \frac{1}{6}p$$

$t = \text{time (min)}$
 $p = \text{\# of pages}$

- c. Find out how long it takes the printer to print a 50-page job if it must first warm up.

$$t = \frac{3}{4} + \frac{1}{6}(50)$$

$$t = \frac{3}{4} + 8\frac{1}{3}$$

$$t = 9\frac{1}{12} \text{ min} = 9 \text{ min } 5 \text{ sec}$$

LESSON 5.2 Practice
For use with pages 292-299

Write an equation of the line that passes through the given point and has slope m .

1. $(-1, 6); m = 5$

2. $(10, 3); m = -2$
 $y - 3 = -2(x - 10)$
 $y - 3 = -2x + 20$
 $+3 \qquad +3$
 $y = -2x + 23$

3. $(2, -3); m = 7$

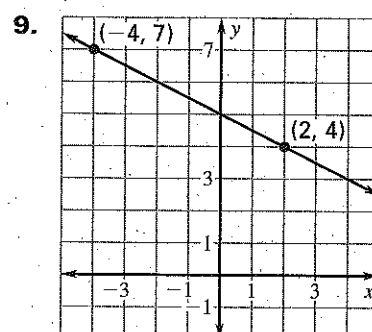
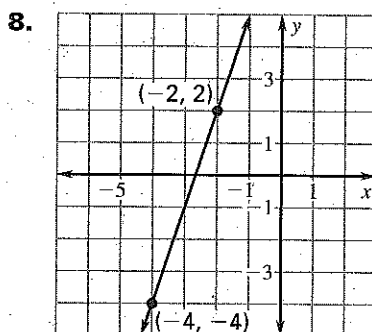
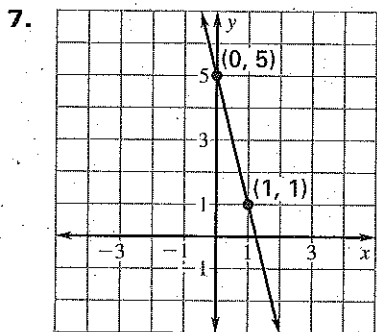
4. $(-4, -9); m = 2$

$y + 4 = \frac{1}{3}(x - 5)$
 $y + 4 = \frac{1}{3}x - \frac{5}{3}$
 $+4 \qquad +4$
 $y = \frac{1}{3}x - \frac{5}{3} + 4$
 $y = \frac{1}{3}x + \frac{7}{3}$

5. $(5, -4); m = \frac{1}{3}$
 $y - 4 = \frac{1}{3}(x - 5)$
 $-4 = \frac{1}{3}x - \frac{5}{3}$
 $-\frac{5}{3} - \frac{5}{3}$
 $-\frac{10}{3} = b$
 $y = \frac{1}{3}x - \frac{10}{3}$

6. $(-8, 1); m = -\frac{3}{4}$ $1 = -\frac{3}{4}(-8) + b$
 $y - 1 = -\frac{3}{4}(x + 8)$ $1 = 6 + b$
 $y - 1 = -\frac{3}{4}x - 6$ $-6 - 6 = b$
 $+1 \qquad +1$ $-5 = b$
 $y = -\frac{3}{4}x - 5$ $y = -\frac{3}{4}x - 5$

Write an equation of the line shown.



Write an equation of the line that passes through the given points.

10. $(-10, 7), (5, -3)$

11. $(-5, -3), (12, 17.4)$

12. $(-8, 84), (5, -46)$

Write an equation for the linear function f with the given values.

13. $f(4) = -8, f(-3) = 1$

14. $f(6) = -4, f(9) = -9$

15. $f(-1) = -6, f(4) = -14$

LESSON
5.3

Practice

For use with pages 302-308

Write an equation in point-slope form of the line that passes through the given point and has the given slope m .

1. $(1, 9); m = -3$

2. $(4, -10); m = 2$

3. $(-5, 6); m = 4$

4. $(-2, -8); m = 3$

5. $(-4, -7); m = -\frac{1}{2}$

6. $(-9, 2); m = -5$
 $y - 2 = -5(x + 9)$

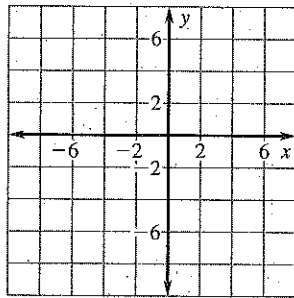
7. $(6, -4); m = \frac{2}{3}$

8. $(0, 15); m = \frac{4}{5}$

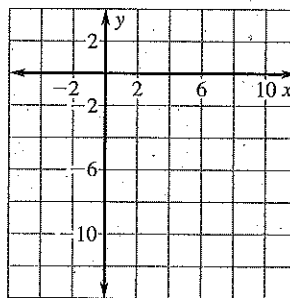
9. $(-8, 0); m = 2$
 $y - 0 = 2(x + 8)$

Graph the equation.

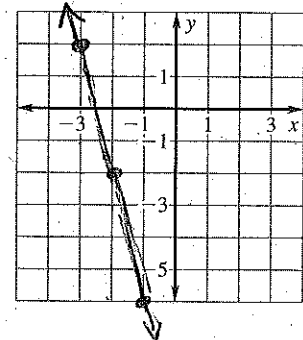
10. $y - 6 = 3(x - 4)$



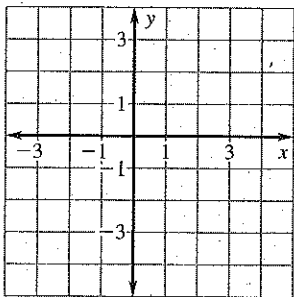
11. $y + 1 = 2(x - 5)$



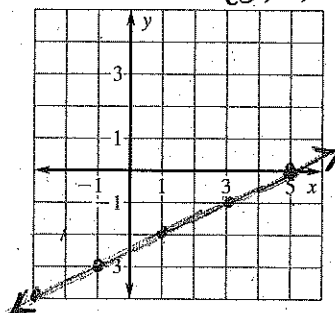
12. $y - 2 = -4(x + 3)$ $m = -4$
 $(-3, 2)$



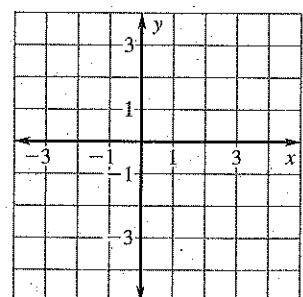
13. $y + 2 = -(x - 1)$



14. $y = \frac{1}{2}(x - 5)$ $m = \frac{1}{2}$
 $(5, 0)$



15. $y + 3 = 5x$



LESSON
5.4

Practice

For use with pages 311-316

Write two equations in standard form that are equivalent to the given equation.

1. $6x + 24y = 18$

2. $8x - 14y = 2$

3. $6x + y = 1$

4. $-4x - 2y = 16$

5. $2x + 3y = 11$

6. $-9x + 4y = 5$

Write an equation in standard form of the line that passes through the given point and has the given slope m .

7. $(4, 3), m = 7$

8. $(5, -1), m = 2$

9. $(-2, 6), m = 1$

10. $(-7, 8), m = -3$

11. $(9, -10), m = -4$

12. $(-15, -4), m = \frac{1}{2}$

$$\begin{aligned} y+10 &= -4(x-9) \\ y+10 &= -4x+36 \\ -10 & \quad -10 \\ \hline y &= -4x+26 \\ +4x & \quad +4x \\ \hline 4x+y &= 26 \end{aligned}$$

$$\begin{aligned} y+4 &= \frac{1}{2}(x+15) \\ y+4 &= \frac{1}{2}x+\frac{15}{2} \\ -4 & \quad -4 \\ \hline y &= \frac{1}{2}x+3.5 \\ -\frac{1}{2}x & \quad -\frac{1}{2}x \\ \hline -\frac{1}{2}x+y &= \frac{7}{2} \end{aligned}$$

$4x + y = 26$

$-\frac{1}{2}x + y = \frac{7}{2}$

$x - 2y = -7$

Write an equation in standard form of the line that passes through the given points.

13. $(2, 6), (3, 8)$

14. $(-1, 2), (5, 4)$

15. $(7, -3), (4, 1)$

16. $(3, -8), (5, -9)$

17. $(-5, 6), (2, -3)$

18. $(-3, -1), (6, -8)$

$$\begin{aligned} m &= \frac{\Delta y}{\Delta x} = \frac{-9-6}{5-3} = \frac{-15}{2} \\ y-6 &= -\frac{15}{2}(x+5) \\ y-6 &= -\frac{15}{2}x-\frac{45}{2} \\ +6 & \quad +42 \\ \hline y &= -\frac{15}{2}x-\frac{39}{2} \end{aligned}$$

$$\begin{aligned} m &= \frac{\Delta y}{\Delta x} = \frac{-8-1}{6-3} = \frac{-9}{3} \\ y+1 &= -\frac{9}{3}(x+3) \\ y+1 &= -3x-9 \\ -1 & \quad -1 \\ \hline y &= -3x-10 \end{aligned}$$

$9x + 7y = -39$

$3x + 3y = -30$

$9(\frac{7}{9}x + y) = -30$
 $7x + 9y = -30$

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LESSON 5.5 Practice
For use with pages 318-324

Write an equation of the line that passes through the given point and is parallel to the given line.

1. (4, 7), $y = 5x - 3$ 2. (3, -2), $y = \frac{2}{3}x + 1$ 3. (-6, 1), $4x + y = 7$

4. (-5, -5), $6x - y = 1$ 5. (0, -8), $8x + 4y = 5$ 6. (-9, 11), $5x - 10y = 3$
- Handwritten work for problem 6:
 $y - 11 = \frac{1}{2}(x + 9)$
 $y - 11 = \frac{1}{2}x + \frac{9}{2}$
 $+ 11$ $+ 11$
 $y = \frac{1}{2}x + 15.5$
- Handwritten work for problem 6 (continued):
 $5x - 10y = 3$
 $-5x$
 $-10y = -5x + 3$
 $\frac{-10y}{-10} = \frac{-5x + 3}{-10}$
 $y = \frac{1}{2}x - \frac{3}{10}$
 $m = \frac{1}{2}$

Write an equation of the line that passes through the given point and is perpendicular to the given line.

7. (1, -1), $y = 3x + 2$ 8. (5, 0), $y = \frac{2}{3}x - 4$ 9. (3, -7), $y = -\frac{1}{5}x + 1$ $m = -\frac{1}{5}$
 $\perp m = 5$
- Handwritten work for problem 9:
 $y + 7 = 5(x - 3)$
 $y + 7 = 5x - 15$
 -7 -7
 $y = 5x - 22$

10. (-9, 2), $10x - 5y = 6$ 11. (10, -11), $-2x + 5y = 1$ 12. (-4, -8), $8x + 3y = 7$
- Handwritten work for problem 12:
 $8x + 3y = 7$
 $-8x$ $-5y$
 $3y = -8x + 7$
 $\frac{3y}{3} = \frac{-8x + 7}{3}$
 $y = -\frac{8}{3}x + \frac{7}{3}$
 $\perp m = \frac{3}{8}$

Determine which of the following lines, if any, are parallel or perpendicular.

13. Line a: $y = 8x - 5$, Line b: $y = \frac{1}{8}x + 1$, Line c: $8x + y = 2$
- Handwritten work for problem 13:
 $y + 8 = \frac{3}{8}(x + 4)$
 $y + 8 = \frac{3}{8}x + \frac{3}{2}$
 -8 -8
 $y = \frac{3}{8}x - 6.5$
14. Line a: $y = -2x + 5$, Line b: $2y - x = 3$, Line c: $2x + y = 1$
15. Line a: $6x + 2y = 5$, Line b: $y = \frac{1}{3}x - 4$, Line c: $y = -3x + 5$

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